

A DISCUSSION OF NEW AND CRITICAL SYNONYMY

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THIS PAPER is devoted to discussions of certain cases of synonymy having special taxonomic and nomenclatural interest. The treatment here outlined will be found useful in dealing with many more binomials and trinomials than it is possible to consider.

1. ***Euphorbia Fendleri*** T. & G., *Pacif. Rail. Rept.* **2**: 175. 1855.

Euphorbia Fendleri var. *dissimilis* Payson, *Bot. Gaz.* **60**: 379. 1915.

Euphorbia Fendleri var. *typica* Wheeler, *Bull. Torrey Club* **63**: 444. 1936
(*syn. nov.*).

Article 16 of the International Rules of Botanical Nomenclature, 1935, the cornerstone of priority, orders that a group with the same circumscription, position, and rank can bear only one valid name, this being the earliest legitimately published one. No exception whatever is made in this Article, or in any other Article, in favor of names holding the typic constituent of a group (here: var. *typica*). *Euphorbia Fendleri* var. *dissimilis* and *E. Fendleri* var. *typica* have the same position (both being published under *E. Fendleri*), the same rank (both being trinomials), the same circumscription (*Payson 119* and *Payson 493*, type-specimens of var. *dissimilis*, having the same taxonomic limits as *Fendler 800*, which is the type-specimen of *E. Fendleri* and *E. Fendleri* var. *typica*), the similarity of the circumscription being freely admitted by Wheeler himself (*Amer. Midl. Natur.* **21**: 527. 1939). It follows that Payson's name published in 1915 renders superfluous and illegitimate that of Wheeler, published in 1936 (see Art. 60 [1]).

Wheeler's fear that the biological complex under *E. Fendleri* is bound to bear the name *E. Fendleri* var. *dissimilis* under Art. 30 is mistaken. This Article does not apply, being concerned with a special case unrelated to the one here discussed; *Payson 119* and *Payson 493* have the same circumscription as *Fendler 800*, so that *E. Fendleri* var. *dissimilis* (1915) becomes the legitimate synonym of *E. Fendleri* (1855). Also misplaced is Wheeler's fear (*loc. cit.*) that: "the subdivisional name including the type of a species may shift, according to the vagaries of the individual, from a name based upon the type of the species to one based on another type." The subdivisional name including the type of a species is the nomenclatural type of the species, which, by definition of

Art. 18, is a constituent part of the binomial, and it may not be separated from it; its type-specimen is by definition the same as that of the binomial. Payson's variety does not include the "type" of *E. Fendleri*, as Wheeler claims, but is included under it, since this binomial is the earlier name, and its type-specimen (*Fendler 800*) and that of Payson's variety (*Payson 119, 493*) have the same circumscription.

It may be objected that, when published, *E. Fendleri* var. *dissimilis* was superfluous under Art. 60 (1), because there was a valid name (*E. Fendleri*) for the group to which this trinomial was applied. To this the answer is that under Art. 60 (1) a name is superfluous only if there was a prior valid name, with its particular circumscription, position, and rank. It is patent that *E. Fendleri* var. *dissimilis* was not superfluous, because this name is a trinomial, while *E. Fendleri* is a binomial, the ranks not being the same.

The reference here made to *Euphorbia* is not to be construed as the writer's acceptance of this generic name for the species involved.

2. ***Sanicula canadensis* L. var. *typica* Wolff, Pflanzenr. 61 (IV. 228): 67. 1913.**

Sanicula canadensis L. var. *genuina* Fernald, Rhodora 42: 467. 1940 (*syn. nov.*).

In publishing *Sanicula canadensis* L. var. *genuina*, referred to the Linnean binomial "in part, as interpreted by Gray, Bicknell, and other authors," because he apparently objected to Wolff's description of var. *typica*, Fernald has violated five Articles and one Recommendation of the rules. He has violated Arts. 16 and 60 (1) in presenting a name (var. *genuina*, 1940) which has the same rank, position and circumscription of a name (var. *typica*, 1913) previously and legitimately published. He has violated Art. 59 in apparently rejecting as objectionable Wolff's name, merely because this name was accompanied by a description which did not agree with Fernald's own understanding of the Linnean plant. He has violated Arts. 47 and 50, believing that an alteration of diagnostic characters required a new name, whereas such alteration (Art. 47, emend. 1936) does not even require the indication of the name of the author correcting the diagnosis. He has acted against Rec. xxxii *quinquies* in failing to specify what part of the Linnean binomial he intended to include under his var. *genuina*, an omission which is significant in view of the previous existence of a legitimately published var. *typica* in the same circumscription, position and rank, this peculiarity requiring an "exact citation" in the fullest sense of the cited Recommendation. As it is well known (Rec. xviii and Rec.

xxxv) the epithets *typicus* and *genuinus* are perfectly synonymous, it being immaterial that Fernald published a var. *genuina* against Wolff's earlier var. *typica*.

3. ***Sanicula canadensis* L. var. *grandis*** Fernald, *Rhodora* **42**: 467. 1940.

Sanicula canadensis L. var. *typica* Wolff, *Pflanzenr.* 61 (IV. 228): 67. 1913, *quoad descr., excl. spec. Linn.*

Fernald cites under var. *grandis*, as a synonym, Wolff's var. *typica*. This is an incorrect citation, presented against Rec. xxxii *quinquies*. Wolff might have erred in improperly describing or interpreting the Linnean specimens when publishing *S. canadensis* var. *typica*, but the fact remains that this variety is based *by definition* upon the Linnean type-plant. Were it not so, the variety could not be designated as var. *typica*. Fernald admits, as a matter of course, that var. *typicus* has the same base as the binomial itself (cf. *Eupatorium album* L. var. *typicum* Fern. = *E. album* L. Mant. 111. 1767, cited in *Rhodora* **39**: 451. 1937), hence he may treat Wolff's var. *typica* as a synonym of his own var. *grandis* only to the extent of Wolff's alleged erroneous description, in no case including or involving in the synonymy the Linnean type-material.

4. ***Lobelia Gaudichaudii* A. DC. in DC. Prodr.** **7**: 384. 1839.

Lobelia Gaudichaudii var. *coccinea* Rock, *Bull. Torrey Club* **44**: 238. 1917; B. P. Bishop Mus. Mem. **7**(2): 117. 1919.

Lobelia Gaudichaudii var. *typica* St. John & Hosaka, *Occ. Pap. Bishop Mus.* **14**: 118. 1938 (*syn. nov.*).

St. John and Hosaka are correct in claiming (op. cit., 120) that in a species having as many variations as *L. Gaudichaudii* it is desirable to assign a subdivisional name to the original binomial. They err, however, in claiming (op. cit., 119) that Rock's var. *coccinea* was superfluous under Art. 60 (1), because *Lobelia Gaudichaudii* is a binomial, while *L. Gaudichaudii* var. *coccinea* is a trinomial, the two names not having the same rank. They erred, furthermore, in publishing their own var. *typica*, 1938, when there already was in the record another name (var. *coccinea*, 1917) with the same circumscription, position, and rank, thus violating a precise disposition of Art. 16 and Art. 60 (1). The oversight made by Rock in publishing var. *coccinea* is not corrected by St. John and Hosaka's violation of the very same Article which they cite against Rock. It was open to them to publish legitimately the typical subspecies of *L. Gaudichaudii*, because a subspecies has not the same rank as a variety. The two authors' comment (op. cit., 120) that "Rock's varietal

name is not only illegitimate but undesirable, because if restated it would make Rock's instead of Gaudichaud's earlier collection the type" is mistaken. Rock's varietal name cannot be said to be illegitimate for the reasons previously given. This name, however, is to be treated as a synonym of *L. Gaudichaudii*, because it is based upon material (*Shaw 12742; Nelson & Stove 10003*) that has the same circumscription as *Gaudichaud 149* (1837). This last collection is the one that must remain as the type-specimen of *L. Gaudichaudii*, and to it must be ultimately referred for comparison all the type-specimens of subdivisions that may be published under this binomial.

5. ***Solidago nemoralis*** Ait. var. ***longipetiolata*** (Mack. & Bush) Palmer & Steyermark, *Ann. Mo. Bot. Gard.* **22**: 660. 1935.

Solidago nemoralis Ait. var. *decemflora* (DC.) Fernald, *Rhodora* **38**: 226. 1936 (*syn. nov.*).

The validity of combinations in which the full bibliographical reference of the basonym is not given has been questioned at length by Fernald (*Rhodora* **39**: 309–310. 1937), whose criticism induced Steyermark to re-present for alleged "validation" (*Rhodora* **40**: 131–134. 1938) a list of already validly published combinations. Like Fernald, Wheeler is of the opinion that a bibliographical reference is an essential part of the citation (*Madroño* **4**: 273. 1938), and he has affirmed (*Amer. Midl. Natur.* **21**: 528. 1939) that at present definite rules for judging the validity of new names and combinations are needed.

These and similar opinions ignore the very existence of Art. 46, which is already in the Rules, stating that: "For the indication of the name (unitary, binary, or ternary) of a group to be *accurate* and *complete*, and in order that the date may be readily verified, it is necessary to cite the author who first published the name in question" (italics mine). It may be added that Art. 28 even authorizes the reduction of more complicated combinations to ternary names, and accepts as a legitimate, or rather as an *accurate and complete citation*, such names as: *Saxifraga Aizoon* subforma *surculosa* instead of the full reference: *Saxifraga Aizoon* var. *typica* subvar. *brevifolia* forma *multicaulis* subforma *surculosa*. Furthermore, Art. 48 states that whenever it is desirable or necessary to abbreviate a citation, the name of the publishing author being the most important must be retained. It is manifest, consequently, that the Rules do not require bibliographical data in order that a citation may be accurate and complete. In ignoring or rejecting *Solidago nemoralis* Ait. var. *longipetiolata* Palmer & Steyermark, and in presenting *S. nemoralis* var. *decemflora*, Fernald has vio-

lated Art. 58 and Art. 60 (1). Under Art. 58 it is immaterial that *S. longipetiolata* Mack & Bush, cited by Fernald as a synonym of his own combination, is later than *S. decemflora* DC., so long as it has been legitimately used in effecting a combination in a new rank.

6. **Cymbopogon Bequaerti** De Wild. Bull. Jard. Bot. Bruxell. 6: 8. 1919.

Andropogon Bequaerti De Wild. loc. cit.; *nomen provisorium* sensu Art. 37 *ter*.

Sprague (Jour. Bot. 74: 75. 1936) claims that provisional names (*nomina provisoria*) are illegitimate, while alternative or eventual names (*nomina eventualia seu alternativa*) are legitimate. This claim rests upon Art. 37 *ter*, which is the *only* Article in the Rules that is concerned with the matter, stating that: "A name of a taxonomic group is not validly published unless it is definitely accepted by the author who publishes it. A name proposed provisionally (*nomen provisorium*) in the anticipation of the eventual acceptance of the group, or of a particular circumscription, position or rank of a given group, or merely mentioned incidentally, is not validly published."

In publishing simultaneously *Cymbopogon Bequaerti* and *Andropogon Bequaerti*, De Wildeman proposed two names with the same circumscription and rank, one of them being necessarily a combination of the other in a different position. So doing, De Wildeman believed either that these two names were synonymous in the accepted taxonomic sense, or that they were not. If he did believe that the names were synonymous, he erred in publishing two names where one was sufficient, the other being superfluous (Art. 16, Art. 60 [1]) or illegitimate (Art. 40); if he did not so believe, he clearly acted to design a new combination "in anticipation of the eventual acceptance of the group," which is a patent violation of Art. 37 *ter*, and creates a *nomen provisorium*.

Contending, like Sprague, that alternative names are validly published, Furtado says (Gard. Bull. Straits Settl. 9: 239-240. 1937) that the practice of publishing such names "has had an origin . . . which appears to me quite sound," and explains that if an author publishes a new species in a section or genus of disputable status, like, for instance, *Andropogon* and *Cymbopogon*, "a botanist in search of easy honours might at once seize the opportunity . . . to make new combinations under the alternative and disputed genus . . . It is to curtail such vexatious activity, and to keep the honour where it is due, that the practice of publishing simultaneous isonyms or alternative names has arisen. *Therefore it was but just that it was validated by the last Congress.*" (Italics mine.)

The "honour" of a botanist is a very minor consideration in the sight of the Rules (Art. 4), and Art. 37 *ter* specifically and peremptorily forbids as *nomina provisoria* names published in the anticipation of the eventual acceptance of the group. It is flagrant that Sprague's and Furtado's alternative and provisional names have the same status, Furtado stating that such names have been legitimized by the Congress, 1935, precisely on account of the *very same* considerations that have induced the Congress to forbid the use of *nomina provisoria*.

It may be true that the discussion that preceded the actual voting of Art. 37 *ter*, as this Article now stands in the Rules, left some botanists under the impression that *provisional names* have been forbidden while *alternative names* have been permitted. However, the impression made upon some individual botanists is not to be confused as yet with the sovereign will of the Congress speaking its decision through an Article enacted in the Rules. The mere fact that "*seu eventuale*" was erased from the proposed draft of Art. 37 *ter* does not mean that eventual names have been approved by the Congress. Nothing can be "assumed" which is not clearly written in the Rules. The Rules themselves admit (Art. 5) that where the consequences of an Article are doubtful, established custom must be followed, such a "custom" being certainly not the private opinion of this or that expounder, nor, in the present case, that of multiplying the useless creation of names (Art. 4) to foresee future contingencies and combinations.

The editors of the Index Kewensis accept in practice the interpretation of *provisional* and *eventual* names as this is given here. They list *Cymbopogon Bequaerti* without comment, but follow the entry of *Andropogon Bequaerti* with the symbol "in syn.," which is tantamount to a rejection of its legitimacy with reference to Art. 40 of the Rules.

Some writers believe that names and combinations put forward without clear statement of rank, but with a suggestion that they belong in one or the other of two ranks, others besides the publishing author to make the conclusion, are *nomina provisoria* and not admissible under the "generally accepted Rules" (see, for instance, Fernald, Contr. Gray Herb. 131: 266. 1940). This belief is hardly worthy of discussion. Names so published are legitimate because it is not an Article but a Recommendation (Rec. xxi), which is neither mandatory nor retroactive, that suggests that names should not be proposed without a statement of their rank. Any author may assign to these validly published names the rank which he believes to be fitting. These names, consequently, are absolutely not *nomina provisoria* in the sense of Art. 37 *ter*, because they are not proposed in the same publication and by the same author as

alternatives for other names, which is essential to the publication of a true *nomen provisorium*.

SUMMARY

With the exception of the last, the cases reviewed err in that they reveal an improper understanding of the type-concept, of the typical constituent of a binomial (trinomial *typicus*, *genuinus* and the like; cf. Rec. xviii and Rec. xxxv), and of priority. Such an improper understanding is displayed alike by editors and taxonomists, the cases here cited being a handful out of many, all of which are tainted by similar or identical errors.

It is undoubtedly very desirable that, as Art. 3 states, "the rules of nomenclature should be simple and founded on considerations sufficiently clear and forcible for every one to comprehend and be disposed to accept." Such simplicity and force, however, can be obtained only through a lucid and consistent interpretation of the Articles and Recommendations. The true needs of nomenclature are not determined by the needs of taxonomists who seldom use categories below the binomial. These needs are determined by the most involved and difficult cases that may arise under the Rules, because these are the cases that the Rules are most often called upon to solve.

It is a matter of common knowledge among taxonomists that one name and one type-specimen (for instance, a binomial and its type-specimen) may be used as the source of many combinations, all of which are "based" on the same name and type-specimen. Thus at the will of a taxonomist the same name and specimen may be treated as a variety, as a subspecies, as a species, and the like. The segregation of subsp. or var. *typicus* or its equivalent (cf. Rec. xviii, xxxv) is merely one of the many combinations that can be effected under the Rules around *the same name and the same type-specimen*. It is manifest that this combination, like every other one, cannot be effected in violation of priority (Art. 16, Art. 60 [1]). Thus it cannot be effected when there already exists in the record a group with the same circumscription, position, and rank. To effect it legitimately, Art. 16 would have to be amended, and a special clause inserted to the effect that the constituent element of a binomial or unit of lower rank (cf. Art. 18) is not subject to the action of the principle of priority. Such an amendment may be desirable or not, which is not the province of these brief notes to decide. What brooks no doubt is that so long as Art. 16 is not so amended, its provisions *must be respected*. To violate them means to publish an illegitimate name, which must be rejected. It may be

very desirable, as St. John and Hosaka point out (*loc. cit.*) to segregate a trinomial *typicus* in a group having many forms, but such segregation cannot be made, in this case, as Articles 16 and 60 (1) now read. Nothing can be assumed by anyone as being in the Rules (see Art. 74) which is not provided for by an Article previously approved by the Congress.

When taxonomists speak of a "type" they generally understand a *specimen* which is the base of a name. The Rules, on the contrary, understand as "types" both *specimens* and *names*. This distinction may be wise or not, which does not come here under discussion. The fact remains that such a distinction is made. To illustrate: Recommendation vii gives the utmost importance to the preservation of the original material on which the description of a new group is based, which this Recommendation calls "type," and which certainly agrees with the *type* that is commonly understood by taxonomists. Recommendation v, on its part, states that when revising a genus, an author should state which species he accepts as the nomenclatural type. Furthermore, Art. 18 legislates that a nomenclatural type is not necessarily the most typical or representative element of a group. It is manifest that the nomenclatural type spoken of by Rec. v and by Art. 18 is not a specimen nor its equivalent description or figure. In fact, the specimen or specimens that "typify" a genus are not designated by an author who *revises* the genus; they are designated by the author who *describes* the genus, barring insignificant exceptions (*species lectotypicae*). Moreover, it is not to be understood how Art. 18 can speak of the nomenclatural type not being "the most typical or representative element of a group," and Rec. vii can speak of the "type" on which the description of the new group is based, if these two "types" are the same thing. It is evident that these two types are not the same thing, that is to say that the nomenclatural type is a *name* (unitary name, binomial, trinomial, and the like) and the "type" in the sense of Rec. vii is a *specimen* or *figure* or *description*.

Having introduced so subtle a distinction in the concept of type, the Rules should have been amplified, thus effecting a proper discrimination in their Articles and Recommendations when speaking of "types." The astounding truth is that the Rules fail to do so. The best example of this confusion and contradiction is to be found in Art. 18, which, as it were, is the Article that clarifies the "type method" itself. This Article states that the nomenclatural type (*sic*) of a species is a specimen, description, or illustration, while Rec. vii and Art. 18 itself, as previously cited, imply that this type is a name. As the nomenclatural type of

Polyporus amboinensis, Art. 18 cites the figure and the description in Rumphius, Herb. Amboin. 4: 129, t. 57, 1.

To clarify the issue, let us suppose that we segregate from *Polyporus amboinensis* the trinomial *typicus* and, having done so, we seek in the Rules an answer to the question whether the nomenclatural type of this binomial is the trinomial *typicus* or *plate 57, 1* of the *Herbarium Amboinense*. The answers we obtain are contradictory: Recommendation xviii and Rec. xxxv tell us very definitely that this type is the trinomial *typicus*; Rec. iv reveals that this type is either *plate 57* or the trinomial *typicus*; Art. 18 states that this type is only *plate 57*, but by implication contradicts itself, as previously seen, speaking of a nomenclatural type "which is not the most typical or representative element of the group."

So glaring and so inexcusable a contradiction spreads itself *all over the Rules*, in which the term "type" means arbitrarily names or/and specimens (cf. Recs. v, vii; Arts. 21 [2], 30, 51, 52). In view of this contradiction and confusion it is not surprising that individual taxonomists should feel unequal to the task of coping with the term "type," and should be lost in a maze of contradictions and doubts when trying to attempt the solution of difficult problems of nomenclature. These problems involve a rigorous understanding of circumscriptions (defined by type-specimens, that is to say by *physical types*), of ranks (defined by names, in many cases these names being *nomenclatural types*), and of positions (involving transfers of names, with the specimens usually remaining unaffected). Thus, for instance, in the case of *Lobelia Gaudichaudii* previously discussed, *L. Gaudichaudii* var. *coccinea* has a very peculiar state in nomenclature and typification. It has the same rank and position as a potential *L. Gaudichaudii* var. *typica*; it has the same circumscription as this trinomial, because its type-specimens (*Shaw 12742*; *Nelson & Stove 10003*) have the same limits as *Gaudichaud 149* (1837), which is the physical type of both *L. Gaudichaudii* and *L. Gaudichaudii* var. *typica*. This notwithstanding, *L. Gaudichaudii* var. *coccinea* has not the full nomenclatural status of *L. Gaudichaudii* var. *typica* because it is not based upon the very same type-specimen of *L. Gaudichaudii*. However, not having the status of var. *typica*, *Lobelia Gaudichaudii* var. *coccinea* nevertheless forbids that var. *typica* be legitimately segregated, because it has the same position, circumscription, and rank as this trinomial (cf. Art. 16; Art. 60 [1]). Last but not least, var. *coccinea* is not superfluous in the sense of the Rules (Art. 60 [1]), because to be such it should have the same position, circumscription, and rank as *L. Gaudichaudii*, which is a binomial, not a trinomial. In brief, the

tangle of specimens and of names, of ranks and of circumscriptions is so close that we must marvel how St. John and Hosaka could ever hope to unravel it in the course of a brief taxonomic treatment. The reader is referred to Wheeler's writings (Contr. Gray Herb. **127**: 58. 1939; Amer. Midl. Nat. **21**: 527-529. 1939) for classic examples of meaningless discussion, in which the term "type" means things unknown and unknowable.

It is manifest that Art. 18 must be amended to read that the *nomenclatural type* of a species, or subdivision thereof, is the subdivision *typicus* or its equivalents (Rec. xviii, xxxv) next below in rank, specimens and descriptions being on the contrary *physical types* that determine the circumscription of the names. A careful study of Art. 4 and Art. 60 (1) is also advisable to see whether the "useless creation of names" may be made to cover the publication of such names as *Lobelia Gaudichaudii* var. *coccinea*.

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